

Groins

How do they work?

These fences are placed at right angles to the beach to trap sand being moved by longshore drift. This creates a wider beach to absorb the waves energy.

Cost per m

£1200

Environmental impact 5/10

They cause erosion down the coast to increase by trapping all of the sand.

Appearance 5/10 They make beaches look messy

Life time

25 years

Issues

They starve other beaches making them narrower so they offer less protection against erosion.



Sea Wall

How do they work?

Concrete walls built to protect towns. They absorb the wave energy and protect the cliffs behind. They often have a curved top to reflect the waves back out to sea.

Cost per m

£5000 (+ any repair work)

Environmental impact 6/10

They create an artificial environment and encourage tourism which can lead to litter.

Appearance 5/10

Life time

100 years

Issues

The walls can create a strong backwash which erodes under the wall.



Rip Rap / Rock armor

How does it work?

Large boulders piled on the beach absorb the wave energy so reducing erosion of the beach or cliff. They can be moved if needed.

Cost per m

£1000

Environmental impact 8/10

Rock armor has minimal effect on wildlife; in some cases it creates new habitats.

Appearance 8/10

These are one of the most natural looking defenses

Lifetime

100-500

years

Issues

They do lose marks for the environmental damage due to transportation.



Managed Retreat

How does it work?

This doesn't stop erosion it allows some coastal areas to erode and flood naturally. Usually this will be areas of low value like nature reserves or farmland.

Cost per m

Varies. There are initial compensation payments to make

Environmental impact 9/10

These retain the natural coastal environment. They create wetlands habitats for wildlife.

Appearance 10/10

This creates a beautiful natural environment.

Life span

Forever

Issues

This is often unpopular as much of the land flooded is rural and attractive so popular for



Gabions

How do they work?

Steel mesh cages filled with boulders to absorb wave energy. They are placed at the bottom of cliffs like a sea wall.

Cost per m

£400

Environmental impact 5/10

These don't look lovely but they actually blend in very well after a few years as grasses and plants start to grow on top of them creating new habitats.

Appearance 2/10

They are ugly and don't look natural for years until vegetation covers them..

Life Span

10 years

Issues

The cages can be sharp so tourists who walk on them can hurt themselves.



Revetments

How do they work?

These are sloping ramps which absorb the waves energy but also allow sand and sediment to filter through small holes to build up the beach behind.

Cost per m

£2000

Environmental impact 4/10

Appearance 4/10

Life Span

Wooden - 25-30 years

Concrete - 40 years

Issues

Like a sea wall, these create a strong backwash which erodes under the revetment.



Beach Replenishment

How does it work?

Sand is added to the beach to replace sand washed away. The beach then absorbs the wave energy protecting the cliffs. The sand needs to be replaced regularly.

Cost per m

From £3-10

Environmental impact 8/10

Collecting sand from the sea bed can kill organisms like sponges and corals.



Appearance 9/10

Other than when the sand is being collected or replaced this looks natural and creates a wide open beach

Lifespan

Up to 5 years

Issues

This needs constant upkeep and as a result is only really suitable for tourist areas.

Dune stabilizing



How do they work?

Dunes are a natural defense against wave energy. The roots of plants like couch grass bind the sand. By planting these and keeping tourists and grazing animals away, the dunes can develop.

Cost per m

£200

Environmental impact 10/10

These defend the natural environment

Appearance 9/10

These don't look like a defense method other than fencing and signage

Lifespan

Forever (if maintained)

Off shore breakwater

How do they work?

These are large piles of concrete or cement just off the coast. They lie parallel to the beach. Breakwaters force the waves to break before they reach the beach so absorb most of the energy.

Cost per m

£300

Environmental impact 6/10

They can damage the sea floor habitat

Appearance 7/10

They don't look natural but they do preserve a wide beach without the use of groins.

Lifespan

Varies dependent on storms and building material

Issues

Breakwaters only reduce erosion and they don't protect the cliffs directly.

